

# Work Order ID 86611

Friday, July 06, 2012 10:12:18 AM

**\*86611\***

Page 1

Item ID: D4588-1

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Item Name: Torsion Spring

Stop **\*NS2\***

Start Date: 7/5/2012 Start Qty: 10.00

**\*10\***

Cust Item ID:

Required Date: 7/19/2012 Req'd Qty: 10.00

**\*10\***

Customer:

Reference:

Approvals:

Process Plan: *MF*

Date: *12-07-06*

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
<b>Draw Nbr</b>	<b>Revision Nbr</b>								
D4588	A								
100	PURCHASING	0.00							
<b>*100*</b>									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <i>17374</i>								
	Possible supplier: Victory springs								
	Manufacture as per dwg D4588								
	material release note required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
<b>*110*</b>									
Packaging	Memo	0.00							
Packaging	Ensure Material Release Note is attached								
120	QC6- Inspect dimensions to drawing	0.00							
<b>*120*</b>									
QC	Memo	0.00							
Quality Control									

*CL 12/07/06 50*

*12/7/12 (50)*

*Wato*  
*XSD*

*DAS*  
*16*  
*12/07/12*

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 86611**

Friday, July 06, 2012 10:12:18 AM

**\*86611\***

Page 2

Item ID: D4588-1

Accept

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**\*10\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

150

Identify as per dwg & Stock Location: 114

0.00

**\*150\***

Packaging

Memo

0.00

Packaging

160

QC21- Final Inspection - Work Order Release

0.00

**\*160\***

QC

Memo

0.00

Quality Control

✓ 8 12/9/14

12/9/18

12-09-17

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

# Picklist Print

Friday, July 06, 2012 10:12:17 AM

Page 1

Work Order ID: 86611

Parent Item: D4588-1

Parent Item Name: Torsion Spring

Start Date: 7/5/2012

Required Date: 7/19/2012

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP revA 12.01.17 new issue EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4588-1P Torsion Spring		Purchased	No			110	Each	0.0000	1	<del>10</del> 50			

6/12/12 (50)

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

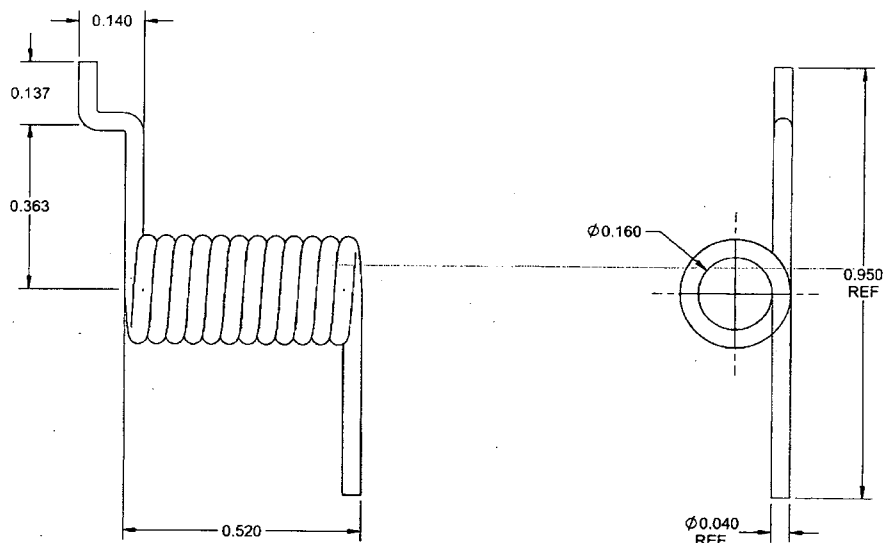
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

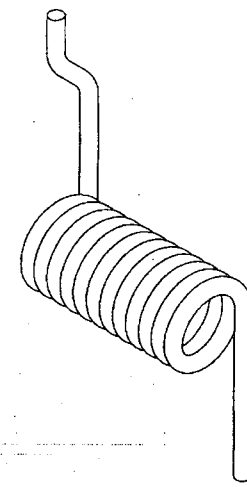
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# SPECIFICATION CONTROL DRAWING



**D4588-1 TORSION SPRING**



#86611

2012-06-05

## NOTES:

- 1) MATERIAL: 301/304 STAINLESS STEEL,  $\phi 0.040$ , PER ASTM A666/A313
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: WITH DART P/N "D4588-1" AND BATCH NUMBER "BXXXXX" PER DART QSI 044 6.6
- 7) WEIGHT: LESS THAN 0.01 lbs
- 8) PREFERRED SUPPLIER: VICTORY SPRING, EDMONTON, ALBERTA, MANUFACTURERS P/N D4588-1P

REV.	DESCRIPTION	BY	DATE
A	NEW ISSUE	AP	12.01.12
Revision Table			
DESIGN	AP	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	AP		
CHECKED	AP		
MFG. APPR.	AP		
APPROVED	AP		
DE APPR.	AP	DRAWING NO. <b>D4588</b> REV. A SHEET 1 OF 1 TITLE <b>TORSION SPRING</b> SCALE NTS	
DATE	12.01.12	<small>COPYRIGHT © 2012 BY DART AEROSPACE LTD  THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO17374

Purchase Order Date 7/06/12

PO Print Date 7/06/12

Page Number 1 of 1

Order From :

VC-VIC002

VICTORY SPRING LTD.  
#2 6104 - 82 AVE.  
EDMONTON, AB T6B 0E7  
CA

Contact Name  
Vendor Phone 866 230 5312  
Vendor Fax 866 230 5338  
Vendor Account Nbr

Buyer Chantal Lavoie  
Requisition Nbr  
Tax Resale Nbr 10127-2607  
Terms Net 30  
Currency CAD  
FOB Destination-Collect

Ship To : DART AEROSPACE LTD 1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAXED**  
6/12/12

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
14588-1P		Torsion Spring	9/14/12 Yes	50.00 Each	FedEx P collect	\$6.8000	\$340.00

Special Inst: AS PER DWG D4588 REV. A  
B86611

PO Total: \$340.00

MATERIAL CERTIFICATION  
REQ'D UPON DELIVERY

CERTIFICATE OF CONFORMITY  
REQ'D UPON DELIVERY

Change Nbr: 1

Change Date: 7/06/12

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required - YES NO



convenient. consistent. correct.

# PACKING SLIP

25492

#2, 6104 - 82 Ave  
Edmonton, AB T6B 0E7  
t + 780 442 4020  
f + 780 466 8000

BILL TO:

Dart Aerospace Ltd  
1270 Aberdeen Street  
Hawkesbury, ON K6A, 1K7

SHIP TO:

DATE		ORDER No.		SHIP VIA	
10-Sep-12		PO17374		FedEx	
QUANTITY	DESCRIPTION			UNIT	AMOUNT
50	D4588-1P Torsion Spring				
GST #	TERMS	SUBTOTAL	FREIGHT	GST	TOTAL
854454527	NET 30 DAYS				

## MATERIAL CERTIFICATION

REPORT FOR: Dart Aerospace Ltd	DATE: 9/10/2012																																	
PART/DRAWING #: D4588 - 1P	PO # PO17374																																	
SPRING DESCRIPTION: Torsion	QUANTITY: 50																																	
MATERIAL GRADE: T302 Stainless Steel Wire Spring ASTM-313-03																																		
<p>PROPERTIES:</p> <table> <thead> <tr> <th>Chemical</th> <th></th> <th>Physical</th> </tr> </thead> <tbody> <tr> <td>Carbon: (C)</td> <td>0.071</td> <td>Size: 0.041"</td> </tr> <tr> <td>Chromium: (Cr)</td> <td>18.380</td> <td>Tensile: 285,000 / 291,000</td> </tr> <tr> <td>Copper: (Cu)</td> <td>0.480</td> <td>Hardness:</td> </tr> <tr> <td>Manganese: (Mn)</td> <td>1.380</td> <td>Heat # 41249</td> </tr> <tr> <td>Molybdenum: (Mo)</td> <td>0.360</td> <td></td> </tr> <tr> <td>Nickel: (Ni)</td> <td>8.150</td> <td></td> </tr> <tr> <td>Nitrogen: (N)</td> <td>0.070</td> <td></td> </tr> <tr> <td>Phosphorus: (P)</td> <td>0.029</td> <td></td> </tr> <tr> <td>Silicon: (Si)</td> <td>0.420</td> <td></td> </tr> <tr> <td>Sulphur: (S)</td> <td>0.001</td> <td></td> </tr> </tbody> </table>		Chemical		Physical	Carbon: (C)	0.071	Size: 0.041"	Chromium: (Cr)	18.380	Tensile: 285,000 / 291,000	Copper: (Cu)	0.480	Hardness:	Manganese: (Mn)	1.380	Heat # 41249	Molybdenum: (Mo)	0.360		Nickel: (Ni)	8.150		Nitrogen: (N)	0.070		Phosphorus: (P)	0.029		Silicon: (Si)	0.420		Sulphur: (S)	0.001	
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Certified by: Jeremy Burrows

Victory Spring Ltd. certifies this to be a true & accurate copy of the original contained in the company records.



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# 2, 6104 - 82 Ave  
Edmonton, AB T6B 0E7  
t + 780 442 4020  
f + 780 466 8000

## CERTIFICATE OF CONFORMANCE

REPORT FOR : Dart Aerospace Ltd	DATE: 9/10/2012
PART/DRAWING #: D4588 - 1P	PO # PO17374
SPRING DESCRIPTION: Torsion	QUANTITY: 50

CHARACTERISTIC	SPECIFIED	MEASURED	NOTES
Material type	SS 302	yes	
Material diameter	0.04	.041"	
Coil I.D.	0.160	0.172	
Coil O.D.	0.24	0.250"	
Number of Coils	12	12	
Free Length	0.52	0.52	
Helix	LHW	LHW	
End type	dwg.	dwg.	
Deburr End			

### COMMENTS

Mill Certificate attached: yes  
Material Heat Number: 41249

Inspected by: *Jeremy Burrows*



# 2, 6104 - 82 Ave  
Edmonton, AB T6B 0E7  
t + 780 442 4020  
f + 780 466 8000

To: Dart Aerospace Ltd.  
Attn: Alex Pharand

## QUOTATION

It is our pleasure to quote on the following:

Date 12-Jan-12

DESCRIPTION & SPECIFICATIONS	QUANTITY	PRICE
D4588 Torsion Spring  Delivery approx 2 - 3 weeks.	50	\$6.80

### TERMS & CONDITIONS

This quotation is subject to review after 30 days. Orders cannot be cancelled except by our consent and on terms which will indemnify us of any loss or damage. Estimates of delivery are subject to change. An over or under run of up to 10% allowed on total parts ordered. Rights reserved to keep all tools manufactured by us. Liability limited to repair or replacement of parts only if they fail to meet specifications or raw material is defective. Under no circumstances shall we be obliged to pay for consequential damages. Springs quoted using commercial tolerances unless otherwise noted. Printed machine tolerances do not apply.

- TAXES EXTRA
- TERMS: NET 30 DAYS

*Chris Burrowes*  
VICTORY SPRING LTD.